

Research Report



Wapiti research at Ministik

Are Wapiti worthwhile?

Ministik trials indicate they are

Venison has certainly gained popularity on the international market.

Eager consumers are now found in countries ranging from Scotland to the Soviet Union and New Zealand to China, where deer are farmed and marketed. And Dr. Robert Hudson, a professor of Animal Science at the University of Alberta, says farmers here should take advantage of the price such a delicacy fetches — up to twice as much as beef — and begin game farming wapiti (often mistakenly called “elk” in Alberta), which he glowingly calls “the largest and most magnificent genotype of the red deer species.” Dr. Hudson is involved in a three-year, \$96,000 Alberta Agriculture “Farming For The Future” project at the Ministik Field Station southeast of Edmonton to find ways Alberta farmers can benefit from wapiti ranching.

Mainly, he’s trying to develop a game management system to help producers select an appropriate land base, determine suitable stocking rates and decide when and how heavy to “winter feed” animals. It’s been a fascinating pursuit for him, since wapiti are so adept at regulating their

weight according to the season. Their success can be seen by their proliferation in the north: while vegetation folds up in the short days of December and January, wapiti may lose 10% to 15% of their body weight, but rebound completely when spring comes and their habitat is friendlier and more bountiful. At Ministik, that weight gain/loss trait allowed Dr. Hudson to feed each animal 2.5 kilograms of alfalfa/barley pellets daily, from December until mid-March, without supplemental feeding. Cost: about \$150. per animal.

In other tests he found calf growth unchanged, despite very different diets (hay, pellets or simply grass in the pasture). That, he says, makes wapiti very inexpensive to feed. “With a farm operation with adequate pasture,” says Dr. Hudson, “you’re just wasting your money on feed. The animals will be the same weight next fall no matter what you do.” Neither is there any advantage in trying to fatten the animals before the winter, since the heavier animals simply don’t forage as hard, and lose more weight than the lighter animals. By spring, they mostly

weigh the same.

And, he says, these animals can be farmed with cattle or bison, or can be put on normally unsuitable land such as native pastures or bush in areas difficult to clear and seed to tame forages. He suggests game farmers start with six wapiti on a quarter section of land sporting about a 50/50 mix of bush and grassland and enclosed with a seven foot high fence. “Game farmers will be buying tame stock from captive herds,” he says. “They’re a little flighty at first, but once they’re settled, there should be no problems. There are two organizations, the Association of Canadian Game Farms and the Alberta Game Growers Association, that supply information and advice, as well as provide contractors to locate stock, transport and settle them.”

INSIDE:
Mice save seed potatoes

Catching some rays

The economics of a solar-heated shop

Alberta receives more sunlight than any other province — a total of 2,203 hours per year. So it is understandable that with energy costs constantly increasing, enterprising Albertans are turning to the sun as an alternative way to heat their homes and farm buildings. Among the legions is mixed farmer Kirk Harrold, who wanted to make the room temperature in his slant-walled farm shop in Lamont more comfortable in the spring and fall without the expense of running a gas furnace. And with a \$2,700 grant from Alberta Agriculture's "Farming For The Future" On-Farm Demonstration Program, he is now trying to determine if a home-built, passive solar collector will meet his needs.

Mr. Harrold's research is being conducted in a 1,536 square foot metal slant wall building, sitting in an east-west direction on his land. The south-facing wall he's experimenting on has almost the same square footage as his floor space. "I always thought it would be perfect for catching the sun's rays," he says. "The slope of the wall is 67 degrees, the best angle for solar panels at this latitude."

In preparation, he painted the metal wall a black enamel. Greenhouse fibreglass panelling was then attached to a 617 square foot frame, mounted

about one inch from the surface (see diagram), and sealed on all edges. Four inch wide vents were cut in the top and bottom of the steel wall. As the air is warmed between the wall and the panelling, it rises by natural convection to the top and into the building via the vents, where two whirring ceiling fans force it back down to the shop floor. In the summer, the vents can be turned outward, so hot air inside the shop can escape. "That," says Mr. Harrold, "makes it effective for both heating and cooling."

"The slope of the wall is 67 degrees, the best angle for solar panels at this latitude."

It took the farmer 136 hours to create his system. He carried out the design and research of his solar panel himself. And so far, he's very pleased with the results. Temperature gains of 30 degrees Celsius have been observed within the collector, which kept his shop 10 to 15 degrees Celsius warmer than the outside air. "And when we added R20 insulation to the walls and ceiling," he says, "we noticed a significant improvement in interior temperature."

But observers say the project was valuable for demonstrating both the advantages and disadvantages of solar heat. While the energy source is indeed free, the materials are not. Brian Kennedy, regional engineer for Alberta Agriculture in Vermilion, says a natural gas heater that would produce an equivalent amount of heat would cost \$213 a year to run. Mr. Harrold says the payback on his unit, including labour, is about 13 years. "Usually a system like this is not considered economical unless the payback period is between three and five years," he admits. "But since this greenhouse fibreglass is guaranteed for 20 years, I'm saving money."

Still another way to enjoy more heat would have been the simple addition of a window. Engineer Kennedy says a south-facing window with an area of about 215 square feet (less than half the collector area) would be 50% to 75% cheaper than building the collector, while maintaining satisfactory daytime temperatures for a farm shop. As well, it would have the added advantage of providing natural lighting during the day. The window would have to be insulated with a shutter or the building would lose its heat at night. Nonetheless, Mr. Kennedy maintains a double-glazed sealed unit would be preferable, although he'll have a hard time convincing Mr. Harrold of that, since the producer enjoyed working indoors on his machinery in relative zero degree Celsius comfort last winter, while it was chilly minus 15 Celsius outside.

CEILING
CENTRE
SHOP

Mice save seed potatoes

A researcher develops a reliable test

Unlike calamities that beset cereal crops, many potato diseases can't be cured or controlled with chemicals. The problem is that the tuber (the edible part) stores disease organisms or "pathogens," as well as food for the plant. These can lie dormant for several generations without exhibiting any outward sign of infection, all the while spreading diseases like ring rot, soft rot and blackleg to other potatoes. By the time an infected plant is spotted, chances are the entire seed crop will have to be ploughed under.

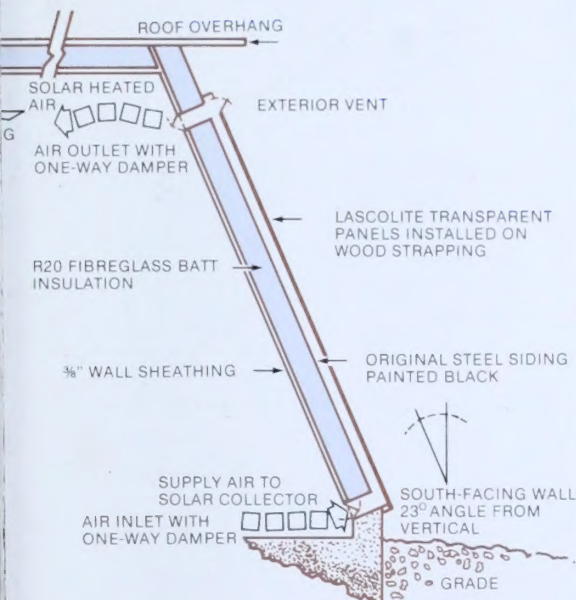
Jim Letal, head of the regional crops laboratory in Olds, says an outbreak of ring rot that occurred in 1937 left "an average of 30% of every potato field showing ring rot infection, resulting in an almost 100% loss in storage." The government later responded with a ring rot control program for potato seed growers, determined to

keep high standards in the industry, since the only way to control the pathogens that spread some of these diseases is by elimination. Eventually, the Alberta Seed Potato Program was established to recognize farms that sell clean seed to the more than 200 potato producers in the province. "Seed potato regulations allow for a zero per cent disease tolerance level," says Dr. Solke De Boer, research scientist with Agriculture Canada's Vancouver research station. In recognition of the importance of the crop to Alberta producers, Alberta Agriculture's "Farming For The Future" has devoted \$148,880 towards Dr. De Boer's efforts to diagnose potatoes for the presence of harmful pathogens. "The test procedure has to be highly sensitive and very specific," says the researcher, "since a false positive diagnosis could be as devastating to a potato seed

grower as the actual occurrence of disease in his crop."

The basic ingredient for Dr. De Boer's work is, of all things, laboratory mice. From these rodents, he extracts highly specific antibodies that react, surprisingly, only to the specialized pathogens inherent in common potato diseases. Once these antibodies are cloned, they're shipped to potato seed farms where producers use them to conduct a simple test to determine the presence of the harmful pathogens. "Using this technique," says Dr. De Boer, "even low levels of pathogens should be detectable." And with such advanced levels of detection, guarantees can be issued with each sale. "The value of Alberta seed potatoes should increase on the export market because of this testing," speculates Dr. De Boer. "Buyers can be certain these diseases are not present in our potatoes."

FARMING FOR THE FUTURE



by Barry Mehr
Assistant Deputy Minister
Marketing
Alberta Agriculture

Solar Collector on a slant wall farm shop



Bar in his Vancouver lab

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Market-oriented agricultural research is key to breaking out of the downward spiral of shrinking markets and falling prices for Alberta's basic crop and livestock production. The time when we could blithely go about planting, growing and selling the same crop to the same buyers for increasing prices is gone. This is a time for new products and new uses for old products. The challenge is to make our basic agricultural production more valuable and more desirable to existing and new markets.

Value added processed food products markets are the opportunity markets of the future. That's why food processing is part of the overall effort to develop food industry technology and raise the level of our agricultural endeavours. At Alberta Agriculture, we have been working to nurture a world class food industry, one that will supply lucrative and expanding domestic and foreign markets. Toward that end, the Province funded and built a state-of-the-art Food Processing Development Centre in Leduc. This \$9 million facility, opened in 1984, has already assisted many Alberta food processors. Alberta products, from frozen crumpets to a canola-oil based salad dressing, that are already on the shelves and passing through check-out counters in Canada and the United States, were developed with significant assistance from Alberta Agriculture's Marketing Sector, including the Food Processing Development Centre.

The annual value of Alberta's processed food and beverage products output is estimated at four billion dollars. Expansion into the large potential markets in the Western United States, Japan and other regions, including Eastern Canada, must increase that figure in years to come.

Alberta can have a more profitable agriculture industry by using cost-saving technologies, increasing productivity and emphasizing the marketing of top quality processed products. An industry that can seize opportunities and fill opening market niches with new products will enhance Alberta's economic performance both for the agrifood industry and for the province.

The task of research will be to improve and develop new products and technologies to meet these future opportunities. The market plans of industry and government will have to be developed in conjunction with research strategies. This will require much greater sophistication in the planning, development and implementation of market strategies. The co-ordination of research and marketing is essential if Alberta is to have success in the agrifood industry in the 1990s and beyond.

WHEAT • where the markets will be

A study shows buyers want new varieties

Knowing your markets is important for producers of any commodity. And given the world's current grain surplus, it's particularly essential for Alberta wheat producers who export about 80% of their seven million tonne harvest. Economists say the global wheat glut won't subside for at least two years, in view of existing stocks and a projected 513 million tonne world wheat crop in 1986. That's promoted a grain war between the United States and the European Economic Community, which has drastically changed markets for Alberta producers. "That grain war has serious consequences for the western Canadian grain economy," says Dr. Michele Veeman, professor of rural economy at the University of Alberta, who has received a \$39,750 grant to study the changing structure of these grain markets.

By examining the world import and export markets in terms of quality of wheat, volumes traded and Canada's market share, Dr. Veeman can estimate the quality and quantity of wheat that should be grown in Alberta to meet future demands. Alberta Agriculture grain market analyst Dwayne Couldwell says a five-year average of the province's top export markets show the Soviet Union leading with five million tonnes (31%) annually, followed by China at 3.3 million tonnes (16%), Japan and Brazil with 1.3 million tonnes each (8%), and several countries like Cuba, the United Kingdom and South Africa with lesser volumes.

But those figures could change at any time. Selling wheat to South Africa is a moral question constantly debated. China produces enough wheat to feed the nation, but inefficient handling and transportation results in 15 million tonnes a year being consumed by rats. South Korea, an occasional buyer, is presently in the market because feed wheat is cheaper than corn. "We have a strong competitive edge, substantial market penetration and a good market share for the high protein, high quality Canada Western Red Spring wheats," says Dr. Veeman. "We're maintaining our market share in centrally planned countries like the U.S.S.R. and China, but there is a question of continuity in these markets. For now, we're just holding onto them."

There has been little research done on market trends, and without careful planning Dr. Veeman worries that Canada may not be able to compete



Dr. Veeman: taking a global view

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with other world exporters. While the interest in Canada's top wheat remains strong, demand is rising the most for the intermediate or "3M" type of wheat — medium protein, medium gluten and medium strength. "We don't have as much of that as we could," says Dr. Veeman, "and we've been lagging behind in research in production of it." Low to middle income countries, whose buying power doesn't afford them the luxury of purchasing higher protein varieties, will probably require a wheat "with a protein content and price level that is less than that associated with No. 1 and No 2 CWRs," she says.

So in light of these trends, Dr. Veeman says it may be advisable for Canadian farmers to grow intermediate varieties to supply such markets. Being the leading producer of hard red winter wheats, the researcher says Alberta is

ideally suited to make any necessary changes. And while producers will have to be price conscious, it's not the only factor to affect market changes — quality and loyalty are major players, too. The U.S.S.R. has found Canada a consistent supplier, and considers the Canadian Wheat Board's policy of not revealing sale prices an attribute. "In that way," says Mr. Couldwell, "that country's purchases don't affect the world supply of grain, and this keeps prices down."

Dr. Veeman says it is important to understand factors other than price in determining why a country remains a patron or changes allegiances. She expects research to tell her the "probability of repeat purchases from a particular exporter or of a given class of wheat, and the probability — based on past behaviour — of a transfer of purchases to another supplier or class of wheat."

The results of her study — which may include, among others, a recommendation "for the development of non-traditional intermediate wheats for future markets" — will be compiled in the next few months and distributed to farm organizations, grain marketing institutions and to those administering the licensing and grading regulations for prairie grains.